BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Subsidiary Diploma in Applied Science Pearson BTEC International Level 3 Foundation Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Applied Science Pearson BTEC International Level 3 Extended Diploma in Applied Science
Unit number and title	**Unit 18: Astronomy and Space Science**
Learning aim	**B**: Undertake measurements and observations of astronomical objects
Assignment title	**Observing and Recording Astronomical Objects**
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	Your local observatory has recently re-opened its doors following a large increase in public interest and local authority funding. You are part of a team of volunteers who have been given the task of demonstrating the use of the observatory's optical equipment and producing relevant and colourful wall posters depicting star charts, ground and space-based telescope images and other historic astronomical material.

Task	Produce a report/poster that contains the following four sections: <u>Section 1 - Telescopes</u> **Describe** the use of different types of telescopes used in modern astronomy. Your work should include the part of the electromagnetic spectrum each telescope uses, a description of how and where each telescope operates (i.e. in space or on Earth). Produce clear notes and diagrams including ray diagrams, which **outline** how both Refracting and Reflecting telescopes magnify an image, supported by practical ray-box determination of *focal length* for converging/diverging lenses and concave mirrors and also *prime focus* for convex mirrors. You should demonstrate why mirrors in reflecting telescopes need parabolic mirrors. Keep all your findings and diagrams in a suitable note book. Video evidence will also be useful. <u>Section 2 – Night-time astronomical objects</u> Plot the positions of suitable astronomical objects onto a published map of the night sky and include the paths of objects against labelled constellation positions. Indicate relevant distances. The motion of the objects chosen must be plotted with accuracy and precision using appropriate celestial co-ordinates. **Explain** the apparent motion of night-time astronomical objects over a suitable period of time.

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	In order to complete your observation of the night sky, you will select appropriate binoculars or a telescope, and use a logbook to detail your records. Comment on the suitability of your method of observation and the degree of accuracy obtained. **Assess** the importance of the practical observations that you have carried out to astronomy. **Evaluate** your findings and the validity of your practical work by comparison with known reliable astronomical data. Collate your own data using a suitable format, identifying errors in your method of observation, equipment used or measurements taken. Suggest valid improvements. <u>Section 3 - Day-time astronomical objects</u> Select at least **two** subjects for observation from the following list and **explain** their relative positions or main features over a suitable period of time: • The motion of the Sun and moon • Lunar / solar eclipses and transits (if available) • The principle of a sundial • Sunspot activity and size and position • Surface of the moon. **Safety:** You must use *projection* methods to make **safe** observations of the Sun and its activity, and accurate sky mapping. Use a logbook to detail your safety precautions, method of observation and sketches taken over a suitable length of time. **Explain** how you can accurately determine the relative positions and features of day-time astronomical objects and **assess** the importance of the practical day-time observations that you have carried out to astronomy
Checklist of evidence required	• A description of the use of specific telescopes using a range of wavelengths • A logbook (and video if applicable) of a practical investigation into the focal points of a concave mirror, concave and convex lenses, and the prime focus of a convex mirror • Practical observation logs of night and day sky objects. • An explanation and report of your night-time observations • A published sky map on which you have accurately positioned the night sky objects you have observed against background field stars that have been identified by right ascension and declination and also altitude and azimuth • An explanation and report of your day-time observations • An assessment of your results to come to a suitable conclusion about what you have observed in the context of what you have researched about night and day sky objects • An evaluation of the accuracy and validity of your observations by comparing the results of your day and night-time observations with published astronomical data.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria, you must show that you are able to:
B.D2	Evaluate the findings and validity of practical astronomical observations in

	understanding the solar system
B.M2	Assess the findings of practical astronomical observations and their importance in astronomy
B.P2	Describe how different types of telescopes are used for astronomical observation
B.P3	Explain the relative positions of night-time astronomical objects
B.P4	Explain the relevant positions and features of daytime astronomical objects

Sources of information to support you with this Assignment	http://amazingspace.org/resources/explorations/groundup/ http://www.skyandtelescope.com/astronomy-resources/what-are-celestial-coordinates/ http://www.schoolsobservatory.org.uk/astro/stars/lifecycle http://imagine.gsfc.nasa.gov/educators/lesson_plans.html